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ABSTRACT

Psychometric properties of sociometric nominations used with preschool children were examined, in order to assess their potential usefulness for concurrent and predictive assessment of the social skills and affective components of social competence. In particular, temporal stability, concurrent validity, and boundary conditions (age and gender differences) of sociometric nominations were investigated. Teacher ratings of social skills and children's observed emotions also were examined as predictors of sociometric nominations. With a mean age of 46 months, the 63 subjects were younger than those in most similar investigations. Findings demonstrated good cross-time and cross-method stability. Gender, but not age, appeared to be a moderator of nominations. Teacher ratings and the extraction of fairly stable, coherent peer status groups confirm the validity of using peer nomination measures with preschoolers. It is concluded that sociometric nominations can be used to assess younger preschoolers' social skills and social deficits. Thirty-three references and 5 tables are attached. (Author/RH)

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Sociometric Nominations of Preschoolers: A Psychometric Analysis

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Running Head: PRESCHOOLERS' SOCIOMETRIC NOMINATIONS

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ABSTRACT

This study investigated psychometric properties of sociometric nominations used with preschoolers, in order to asssess their potential usefulness for concurrent and predictive assessment of the social skills and affective components of social competence. Stability, concurrent validity, and boundary conditions of sociometric nominations were investigated. Teacher ratings of social skills and children's observed emotions also were examined as predictors of sociometric nominations. The 63 subjects were younger than those in most similar investigations (mean age = 46 mos). Good cross-time and cross-method stability were demonstrated. Gender, but not age, appears to be a moderator of nomination data in this age range. Teacher ratings and the extraction of fairly stable, coherent peer status groups confirm the validity of using peer nomination measures with preschoolers.

Sociometric Nominations of Preschoolers: A Psychometric Analysis

Early childhood educators more and more often need reliable and valid measures of social competence. It is, of course, important important to evaluate current, developmentally appropriate aspects of social competence. Peer assessments reflect both the social skill and affective components of such competence (Denham, McKinley, Couchoud, & Holt, 1990). Sociometric evaluations also may be good candidates for predictive assessment of early, persisting patterns of social skills and social skills deficits (Rubin & Daniels-Byrness, 1983). This study investigates psychometric properties of sociometric nominations used with preschoolers, in order to assess their potential usefulness for these purposes.

Ratings of overall likability have been seen as more stable than sociometric nominations, and therefore more useful, with preschoolers (Hymel, 1983). Recently, however, it has been suggested that nomination measures of peer status can be useful at a younger age than often previously thought (Bullock, Ironsmith, & Poteat, 1988; Poteat, Ironsmith, & Bullock, 1986). For this suggestion to have practical value, psychometric reliability and validity of the measures must be

established for children within the preschool age range. Temporal stability should be addressed. Are children's proportions of positive and negative nominations stable over time? Concurrent validity also would be demonstrated if nomination measures were coherently related to ratings of overall likability. In this study stability and concurrent validity of preschoolers' sociometric nominations will be evaluated.

Earlier research on preschoolers' sociometric nominations has been rendered inconclusive by the oversight of potentially important moderating factors. Despite an initial demonstration of reliability and concurrent validity, then, it also would be important to delineate the "boundary conditions" of the usefulness of peer nominations at this age.

Age would be one such boundary condition. Perhaps older children obtain more positive nominations because social skills are more developed. Nominations obtained by older children also might be more stable.

Gender would be another possible boundary condition. Perhaps one gender or the other obtains more positive ratings; boys' well-documented aggressiveness makes them likely candidates for more frequent negative nominations (Maccoby & Jacklin, 1974). Moreover, children may pick their own gender as liked, and the

opposite gender as disliked (Maccoby & Jacklin, in press).

Given adequate stability, concurrent validity, and the establishment of boundary conditions for nominations' use, predictive validity is important. That is, what is the usefulness of this information? To what pattern of social competence are nominations related? Similar specification of social cognitive, affective, and behavioral correlates of peer nominations has been a focus of much recent research with later preschool-, kinderparten- and elementary school-aged children (Coie & Kuperschmidt, 1983; Dodge, 1983; Putallaz, 1983; Rubin & Clark, 1983; Rubin & Daniels-Beirness, 1983).

For example, there is empirical evidence indicating that certain social behaviors are often related to older preschoolers' sociometric ratings. For example, more well-liked children initiate positive interaction more often and show less aggression (Rubin & Clark, 1983; Rubin & Daniels-Beirness, 1983; Rubin, Daniels-Beirness, & Haywren, 1982).

Preschoolers' positive nomination scores have been previously related to affection, attention, reassurance and protection given to others, and sophisticated play forms (Goldman, Corsini, & deUrioste, 1980; Moore & Updegraff, 1964). Negative nominations have been

related to seeking physical contact, reassurance, attention, and help, as well as developmentally young play patterns and lack of emotion knowledge (Goldman, Corsini, & deUrioste, 1980; Moore & Updegraff, 1964). Moreover, negatively nominated children are less cooperative and nurturant, and dispense and receive less social reinforcment (Hartup, Glazer, & Charlesworth, 1967; Masters & Furman, 1981).

The affective domain also is an important focus in the search for predictors of peer status. Emotions are increasingly recognized as powerful intra- and interpersonal regulators of behavior. One's expressed emotions communicate powerfully to others (Bretherton, Fritz, Zahn-Waxler, & Ridgeway, 1986). Peers find it easier and more pleasant to interact with emotionally positive children, rating happy children as more popular (Sroufe, Schork, Motti, Lawroski, & LaFreniere, 1984), and angrier children as unlikable (Rubin & Clark, 1983). Enduring emotional state was investigated in this study as a predictor of peer nominations. No previous investigations of peer nominations in the preschool have focused on this important facet of social competence.

Peer nominations of school-aged children are often used to make possible investigation of specified status groups, such as popular, rejected, isolated, and

controversial groups (e.g., Coie, Dodge, & Coppotelli, 1982). It is difficult, however, to collect nomination preschool data in large enough samples to discern these status groups by Coie et al's standard deviation methods; moreover, even when investigators search for such groups, they are not always found (Mize & Vaughn, 1990; cf. Musun & Miller, in press; Poteat, Ironsmith, & Bullock, 1986).

Given that current research generally focuses on measurment issues in identifying peer status in preschoolers, it remains to be seen whether the outlines of such peer reputations are beginning to form by four years. Moreover, the behavioral correlates of such preschool statuses have not been studied extensively. In this investigation, Goldman et al's less stringent method (1980) for discerning peer status groups will be used. We will determine whether peer status groups can be delineated, whether such peer status is stable over a nine-month interval, and the correlates of such status.

In summary, stability, concurrent validity, and boundary conditions of sociometric nominations will be investigated. Teacher ratings of social skills and children's observed emotions will be examined as predictors of sociometric nominations. Peer status groups will be extracted, and examined for stability and

correlates. Importantly, subjects will be younger than those in most similar investigations.

Method

Subjects

Subjects were 63 preschoolers (mean age in year one = 46.03 mos; range 36-66 mos). They were enrolled in four classrooms of a university laboratory preschool in a suburb of a major metropolitan area. There were 32 boys (mean age = 47.34 mos) and 31 girls (mean age = 44.68 mos). In the second year of assessment, 36 children were tested (mean age = 54.08 mos; range 45-65 mos). In this second year, there were 19 boys (mean age = 56.63 mos), and 17 girls (mean age = 51.24 mos).

Sociometric Measures

Picture nominations. Each child was interviewed using a picture-board sociometric nomination procedure. In private sessions with a tester whom they knew well, children were shown pictures of all the children in their class and asked to name each picture. Then the children were asked to pick three children who fit the description "you like them a lot, they play nice, and they share." Next the children were asked to pick three children who fit the description "you don't like them, they hit, they are mean." The experimenter accompanied these statements with appropriate facial and vocal

affective cues. Positive and negative nomination measures were derived by summing the number of times each child was selected by his or her peers as liked or disliked, respectively.

Because there were different numbers of children in each classroom, all scores were converted to the proportion of positive nominations and the proportion of negative nominations for analyses. Peer nominations were also obtained approximately four weeks and nine months after the first session. For Year One to Year Two analyses, the Year One proportions were averaged across the two times of measurement. Stability of nomination proportions is defined as the difference in standard scores for nomination proportions between Years One and Two.

Peer status groups were formed as follows (see also Goldman et al., 1980): proportion of positive and negative nominations in each year were split at the median. Children scoring higher than the median on positive nominations and lower than the median on negative nominations were considered popular. Those scoring higher than the median on both nominations were consider controversial. Children scoring higher than the median on negative nominations, but lower than the median on positive nominations, were considered

rejected. Those scoring lower than the median on both nominations were considered isolated.

Picture sociometric rating. This technique was implemented to evaluate each child's overall peer status. Children rated peers, whose photographs they had already named, by inserting the photographs into boxes on which drawings of positive, negative, and neutral faces were affixed. They were taught to insert a photo into the smiling, positive box if they liked the peer "a lot", in the neutral box if they "kinda" liked the peer, and in the frowning, negative box if they "did not" like the peer (Asher et al., 1979). Asher et al's original methodology was modified to include a tutorial session in which the experimenter demonstrated the task before requiring the child to make ratings. Ample facial and vocal cues for the emotion of "liking", "disliking", and "kinda liking" were displayed by the tester while she placed Fisher Price "people" in the boxes. Children were also rated by peers approximately nine months after the first rating.

All scores were converted to proportions before analyses: the proportion of positive ratings, the proportion of negative ratings, and the proportion of neutral ratings. Because of the substantial negative intercorrelation between proportions of positive and

negative ratings ($r = -.76$, $p < .001$, for averaged year one ratings), an aggregate of overall likability was created. It equaled the total number of positive ratings minus the total number of negative ratings / total number of ratings/ Cronbach's alpha was .86.

Teacher Ratings of Social Behavior. Each subject's teacher completed the Baumrind Preschool Behavior Q-Sort (BPB). For this measure teachers sort 72 cards, on which behavior descriptions are written, into piles from 1 to 9 indicating how well the statement describes each child (Baumrind, 1968, 1971).

The items on the friendliness scale characterize a child as: understanding of other kids' position, sympathetic, helpful, not insulting or a bully, nurturant, and altruistic, likely to share. Thus the friendliness scale can actually be seen as a set of items measuring prosocial responses to others' emotional needs. Cooperative and dominant scales were also utilized. Item content of the cooperative scale characterizes a child as obedient, rule-following, self-controlled, trustworthy, and accepting of guidance. The dominant scale characterizes the child as a peer leader with a "mind of his/her own," planful, and individualistic.

The Preschool Behavior Questionnaire also was completed for all subjects by each subject's teacher (PBQ; Behar & Stringfield, 1974). This is a 30-item questionnaire, which includes items like "fidgets a lot", "cries", and "destroys property." The teacher indicates by a score of 0 to 3 the prevalence of each behavior for the subject. The aggression and miserable/unhappy factors derived from this measure was used in this study. Total Behavior Problem scores were also used.

Emotion Observed in the Preschool Classroom. Children's happy, sad, angry, hurt, afraid, and "other" emotions were observed during free play in the preschool classroom, by four independent observers, using focal event sampling. Scores used here included percentages of the total number of happy and angry displays shown by each subject. These measures are considered indices of these subjects' enduring emotions because each focal child was observed for an average of 40.57 minutes, over an average of 8.33 days.

Emotion displays were judged live based on facial, bodily, vocal, and behavioral indices (Denham, 1986). Observation took place from late fall through late spring of each year. Of the 1092 happy displays coded, 120 (or 11.08% of the total) were observed for

reliability analyses. Percentage agreement [# agreements / (# agreements + # disagreements)] for these 120 happy displays equalled 82% across observers. Of the x sad displays noted ,Of the 212 angry displays noted, 31 (or 14.55 % of the total) were observed for reliability analyses. Percentage agreement for for these 31 angry displays equalled 81% across observers. Percentage happy, sad, and angry scores will be used in analyses to follow.

Results

Temporal stability. Cross-time relations among nomination measures are shown in Table 1. For Year One, positive nominations were positively but nonsignificantly correlated with positive nominations obtained four weeks later. On the other hand, negative nominations were significantly positively correlated with negative nominations obtained four weeks later. Over the nine-month interval, positive nominations were significantly positively correlated, as were negative nominations.

Concurrent Validity. Cross-method correlations among sociometric measures are shown in Table 2. Proportions of nominations and rating scores for each subject were correlated. For Year One, both positive and negative nominations were positively related to

their respective sociometric ratings, and negatively related to opposing ratings. For Year Two, both positive and negative nominations also were positively related to their respective sociometric ratings, and negatively related to opposing ratings.

Each peer's nominations and ratings of each subject also were cross-classified. Chi-square analyses showed that the frequency distribution of nominations varied according to ratings. Of 347 positive nominations, 305 children were concurrently given positive ratings (47 positively rated children were given negative nominations). Of 343 negative nominations, 242 were concurrently given negative ratings (only six negatively rated children were given positive nominations). Eighty-nine children were given neutral ratings which did not correspond to either nomination. The chi-square for this distribution was 416.25, $p < .00001$.

Insert Tables 1 and 2 here

Boundary Conditions. Gender was a significant boundary condition. Of 347 positive nominations, 269 were to same-sex peers; of 343 negative nominations, 227 were to opposite-sex peers [$\chi^2(1) = 133.18$, $p < .001$]. Furthermore, in both Years One and Two, boys obtained

more negative nominations than girls [F (1, 62) for year one = 15.12, p < .001; F (1, 34) for Year Two = 7.50, p < .01]. Stability of negative nominations was, however, marginally less for boys [F (1, 34) = 3.38, p < .10]. In both Year One and Two, girls also obtained more positive nominations (Fs = 4.04 and 3.39, ps < .05 and .10, respectively).

Analyses to determine whether older children obtained more positive nominations did not yield significant results. For both Years One and Two, there were no consistent differences in mean positive or negative nomination scores for young, middle, and oldest children.

Stability of negative nominations from Year One to Year Two did not differ for young, middle, or oldest children. However, stability of positive nominations tended to differ, with younger children's proportion of positive nominations more likely to change [F (1, 34) = 2.54, p < .10].

Predictive Validity. Friendliness scores from the BPB were marginally positively correlated with positive nominations, and negatively correlated with negative nominations. Cooperativeness ratings from the BPB were negatively correlated with negative nominations.

Dominance scores from the BPB were unrelated to peer nominations.

BPQ scores for Aggression were significantly positively correlated with negative nominations. Unhappy/miserable scores from the BPQ were unrelated to peer nominations. Total problem behavior scores, however, were also related to negative nominations.

Prevalence of observed happy displays was marginally positively related to positive nominations. Prevalence of observered angry displays were, conversely, negatively correlated with positive nominations, and positively but nonsignificantly related to negative nominations. Observed sadness was unrelated to nominations.

Insert Tables 4 and 5 here

Peer Status Groups. As can be seen in Table 4, stability from Year One to Year Two was statistically significant. Inspection of the frequency table suggests that stability did not occur for controversial and isolated groups. Specifically, children who were controversial in Year One equally easily became popular or rejected in Year Two, and children who became controversial in Year Two came from all three other Year

One status groups. Children isolated in Year One who changed statuses, became any of the other three statuses, and those who became isolated in Year Two had been either popular or rejected the previous year. In contrast, children who were rejected in Year One but changed statuses became isolated. Children who became rejected in Year Two tended to have been previously isolated.

Coherent behavioral and affective differences were found among popular, rejected, and isolated peer status groups (see Table 5). Popular children were rated by teachers as friendlier, more cooperative, and exhibited fewer overall behavior problems. In stark contrast, rejected children were seen as less friendly, less cooperative, more dominant, more aggressive, and as exhibiting more behavior problems. They were also observed as more angry. Isolated children's profile of teacher ratings showed them to be cooperative, nondominant, and miserable.

Discussion

This study investigated the psychometric properties of sociometric nominations used with preschoolers, in order to asssess their potential usefulness for early childhood educators and others who need reliable and valid measures of social competence. We confirmed

that such peer assessments may be useful predictors of early, persisting patterns of social skills and social skills deficits.

Cross-time Stability. These findings of stability of nomination interview results concur with those found with slightly older subjects (e.g., Poteat et al., 1986; Wasik, 1987). In particular, the significant relations for positive and negative nominations across a nine-month interval suggest that Hymel's (1983) conclusions may have been premature. Thus, social acceptance and social rejection, and the means of measuring them are becoming stable during the preschool period.

Cross-method Concurrent Validity. Other investigators have reported cross-method stability between sociometric ratings and nominations, but generally with slightly older subjects (Asher et al., 1979; Goldman et al., 1980; Poteat et al., 1986; but cf. Musun-Miller, in press). Our findings confirm and extend this conclusion to younger children. Moreover, the conclusion is strengthed by the findings that not only did subjects' sociometric ratings correlate with the proportion of positive and negative nominations they obtained, but the children doing the rating showed cross-method consistency in their nomination of specific peers. Possibly the

methodological addition of affective facial and vocal cues enhanced these younger preschoolers' understanding of both sociometric tasks.

Additionally, nominations were performed here in answer to a set of questions about peers that the subjects "liked/didn't like a lot." Because preschoolers' notions of friendship may be less complex than those of school-aged children (Poteat et al., 1986), not requiring them to differentiate between "best friends" and "likability" may have increased commonality of methods.

Boundary Conditions. A strong effect of gender was found for the valence of nominations: girls selected girls as liked, and boys as disliked. The converse also was true. These findings are supported by data showing that four-year-olds preschoolers' negative cross-sex interactions increase, and their cross-sex interactions decrease, during the school year (Ramsey, 1989). The cross-gender effect stands in stark contrast to the simultaneous overall decrease in negative interactions (Ramsey, 1989).

Age was not a strong moderator of nomination findings. The youngest children's positive nominations tended to be unstable, however; Ramsey's (1989) findings parallel this, in that three-year-olds' other-directed

positive and negative behaviors, which presumably underlie others' nomination judgments, also are less stable than four- and five-year-olds'.

Predictive Validity: Correlates of Sociometric Nominations. Both teacher ratings and observations showed coherent relations with nomination measures (see Landau, Milich, & Whitten, 1984, for similar results with an older sample). Teacher ratings were most highly correlated with negative nominations. Friendliness, nurturance, and altruism, rather than aggression or preoccupation with one's own distress, develop early as responses to others' emotional displays. By three and a half years, most children should be able to respond with pragmatic, positive interventions when others are in need. Children who cannot do so appear to be at risk of being disliked. The strong negative relation between young preschoolers' surprisingly stable negative nomination scores and teachers' ratings of such prosocial, non-aggressive behavior suggests that these children are also discerning individual differences in each others' characteristic reactions to peer emotion (see also Ladd & Mars, 1986).

Dominance in this sample appears to be a complex mixture of assertiveness and bossiness (Denham & Burger, 1990). Sadness, as measured in both teacher ratings and

observations, may not be apparent or salient to peers. Thus, it is not surprising that these two behavioral dimensions did not correlate with nomination measures.

Observational measures of expressed emotion, particularly anger, were more strongly related to positive nomination scores. A strength of this study is, then, the highlighting of the role of preschoolers' inability to regulate negative emotion in the formation of peer reputation.

Status Groups Correlates of preschoolers' peer status groups have been documented, again with slightly older children, by Goldman et al. (1980) and Bird and Lavoie (1989). In general, earlier findings underscore the immature play patterns and less positive interaction of rejected preschoolers solitary and less positive. Conversely, the sparse extant data has suggested that popular preschoolers show higher level play and better conversation skills.

Our findings show that fair stability of peer status, particularly for popular and rejected groups, is emerging. Behavioral differences among groups again highlight the rejected group's risk status: they are showing both behavioral and affective deficits. As suggested by Vitaro, Gagnon, & Boivin (1989), the

stability of positive and negative behaviors underlying presumably stability of peer status should be investigated.

In the current study, the isolated status is problematic because of its lack of stability. The profile of those children who were isolated in Year One, however, characterizes them as passive and unhappy; parallel evidence has been found by Rubin, Daniels-Beirness, and Bream (1984), who found that isolated kindergarteners and first graders suggested nonassertive and compliant strategies to solve interpersonal conflict. Although the stability of this status group during preschool is poor, and its longitudinal prognosis is uncertain, the profile of correlates found here suggests that these children do deserve attention during the period that they would fit the isolated designation.

The current findings also underscore the nonoptimal development of children who fit the rejected designation. The negative peer nominations which are central to rejection are stable as early as three and one-half years, and supported by teacher ratings and observations of children emotions. Participation in the world of peers, a newly important developmental task, already is compromised for these children. Interventions to ameliorate their anger and aggression,

and inability to react prosocially may be necessary even earlier than previously believed.

In conclusion, this psychometric analysis shows that sociometric nominations can be used to assess younger preschoolers' social skills and social deficits.

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Table 1

Stability of Nomination Measures Over Time

	1	2	3	4	5	6
1. Negative Nominations (Year 1, Time 1)	---	.43**	-.24*	-.35*	.41*	-.14
2. Negative Nominations (Year 1, Time 2)		---	-.25+	-.36*	.48*	.14
3. Positive Nominations (Year 1, Time 1)			---	.23	-.34*	.64***
4. Positive Nominations (Year 1, Time 2)				---	-.25	.25
5. Negative Nominations (Year 2)					---	-.12
6. Positive Nominations (Year 2)						---

Note. N for Year One, Time One equals 63. N for Year One, Time Two equals 45. N for Year Two equals 35.

+ p < .10. * p < .05. ** p < .01. *** p < .001.

Table 2

Relations of Nomination Measures With Ratings Measures

	Positive Ratings[a]	Negative Ratings	Aggregate[b]
Negative Nominations (Year 1, Time 1)	-.43 **, c	.60 **	-.57 *
Positive Nominations (Year 1, Time 1)	.47 **	.46 **	.52 *
Positive Nominations (Year 1, Time 2)	.18 [d]	.11	.22
Negative Nominations (Year 1, Time 2)	-.36 *, d	.69 ***	-.25 *
Negative Nominations (Year 2)	-.38 *, e	.60 ***	-.53 ***
Positive Nominations (Year 2)	.55 ***	-.40 **	.50 ***

Table 2 (continued)

[a] Number of positive ratings / number of ratings in classroom. [b] Number of negative ratings / number of ratings in classroom. [c] N = 63. [d] N = 45. [e] N = 35.

\+ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Relations between Nominations with Teacher Ratings and Observed Emotions

	Positive Nominations	Negative Nominations
Teacher Ratings[a, b]		
Friendly	.24+	-.47**
Cooperative	.14	-.44**
Dominant	.08	.14
Aggressive	.20	.53***
Miserable/ Unhappy	.05	.12
Total Behavior Problems	-.16	.44***
Observed Emotions[c]		
Happy	.36*	-.08
Sad	-.10	.05
Angry	-.58***	.24

[a] $N = 63$. [b] First three teacher ratings come from the Baumrind Preschool Behavior Q-Sort (BPBQS); last three come from Preschool Behavior Questionnaire (PBQ). [c] Emotions observed in the preschool classroom.

+ $p < .10$. * $p < .05$ ** $p < .01$. *** $p < .001$.

Table 4

Stability of Peer Status Groups

	Year One			
	1. Popular	2. Controversial	3. Rejected	4. Isolated
Year Two				
1.	7	2	0	1
2.	1	4	1	2
3.	1	1	6	2
4.	2	0	3	2

Chi-square (9) = 21.02, $p < .025$.

Table 5

Teacher Ratings and Observed Emotion Differences for Peer Status Groups

	F	Mean Comparison
[a, b] Teacher Ratings		
Friendly	5.09**	Popular > Controversial, Rejected
Cooperative	4.00*	Popular and Isolated > Rejected
Dominant	1.74	Rejected > Isolated
Aggressive	7.93***	Rejected > All others
Miserable/unhappy	1.81	Isolated > Rejected
Total Behavior Problems	3.05*	Rejected > Popular
[c] Observed Emotions		
Happy	< 1	---
Sad	< 1	---
Angry	2.55+	Rejected > Isolated

[a] [b] df = 3, 41. First three teacher ratings come from the Baumrind Preschool Behavior Q-Sort (BPBQS); last three come from Preschool Behavior Questionnaire (PBQ). [c] Emotions observed in the preschool classroom.

+ p < .10. * p < .01. ** p < .001.